

STATUS OF THE CLAIMS:

1 Claim 1 (Currently Amended). A method for machining a glass substrate in which
2 a concave portion is formed in a surface of said glass substrate by laser beam
3 irradiation, comprising the step of:

4 forming a concave portion in a surface of a glass substrate, by irradiating
5 said surface of said glass substrate to be machined with a laser beam from above
6 said glass substrate in a state that said laser beam is condensed into a portion
7 outside said glass substrate.

1 Claim 2 (original). The method according to claim 1, wherein, in said state said
2 laser beam is condensed in said portion outside and above said glass substrate.

1 Claim 3 (previously amended). The method according to claim 1, further
2 comprising the step of:

3 changing a distance between a beam-condensing point of said laser beam
4 and said surface of said glass substrate.

1 Claim 4 (currently amended). The method according to claim 1, further
2 comprising the step of:

3 moving where said beam-condensing point of said laser beam is condensed
4 relatively in a direction parallel to said surface of said glass substrate.

1 Claim 5 (previously amended). The method according to claim 1, wherein said
2 laser beam is pulsed light having a pulse width not larger than 10 picoseconds.

1 Claim 6 (currently amended). A V-shaped groove formed in a surface of a glass
2 substrate by laser irradiation using a laser beam that is condensed above a surface
3 of said glass substrate a method for machining said glass substrate as defined in
4 claim 1, wherein an angle of from 30 degrees to 120 degrees is formed between
5 opposite side surfaces of said V-shaped groove.

Claims 7-11. Canceled

1 Claim 12 (new). The method of claim 1, wherein the concave portion in the glass
2 substrate has a conical hole shape.

1 Claim 13 (new). The method of claim 1, wherein the formed concave portion is a
2 V-shaped groove.

1 Claim 14 (new). The method of claim 1, wherein the glass substrate has
2 dimensions of about 20 mm x 30 mm x 2 mm.

1 Claim 15 (new). The method of claim 13, wherein the V-shaped groove has a
2 groove width in a range of 49-87 μm and a groove depth in a range of 19-67 μm .

1 Claim 16 (new). The method of claim 13, the V-shaped groove having respective
2 side surfaces with an angle θ between side surfaces in a range of 30-120 degrees.

1 Claim 17 (new). A method of forming a V-shaped groove in a surface of a glass
2 substrate, comprising:
3 disposing the surface of the glass substrate below a beam-condensing point
4 of a laser beam; and
5 irradiating said surface of said glass with said laser beam.

1 Claim 18 (new). The method of claim 17, wherein the laser beam is a pulsed laser,